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ASSOCIATION

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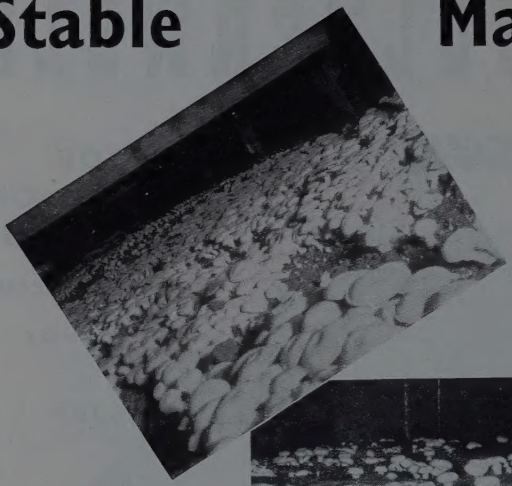

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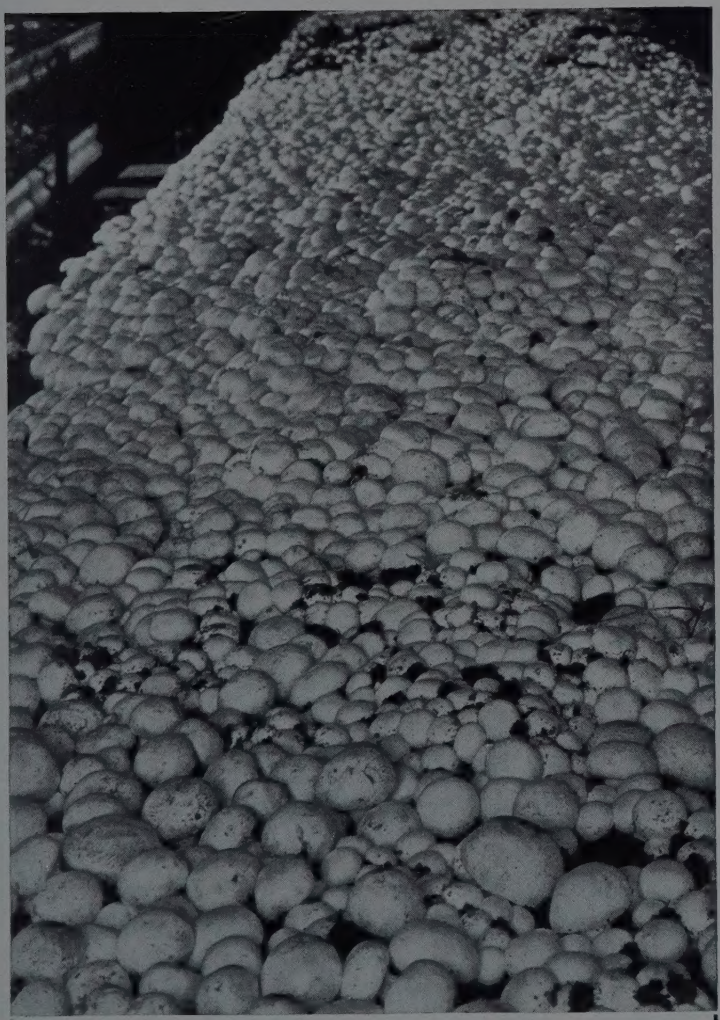

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AFTER MANY EXPERIMENTS MOST GROWERS RETURN TO

The
MGA BULLETIN
SEPTEMBER 1954
NUMBER 57

EDITORIAL

FACTS OF LIFE

A well-known Northern grower walked into our office a few days ago with £1,000 to spend. He was, he said, intending to install a new heating plant and wanted to spend the money with a firm who supported us by advertising. But alas, on looking through our current issue, he was unable to find what he wanted and he departed sadly saying, "Well, I may as well spend the money with someone on my doorstep."

No fairy story this but a plain, honest fact.

Forgive us then if, just for once, we talk a little about ourselves and how this Bulletin comes to be issued each and every month.

In the first place, without making any reference to either the quality or the quantity of our product, a comparatively small association like the MGA is rather fortunate in having a monthly publication of this kind. Few if any similar sized Associations in this country can boast likewise and indeed many larger Associations who venture into the world of literary publication for members find such publications quite a severe financial burden. But it is not so with us for, in the matters of finance, this Bulletin stands on its own feet. True the margin between profit and loss is small but it is, nevertheless, a margin.

The total all-in production cost each month for the Bulletin runs to about £120 or, in round figures, £1,500 per year, the equivalent of the Grower Membership subscription of 350 full members! In point of fact subscriptions do not support the Bulletin in any way for, like pretty well every other publication, it is the advertisers who, by taking space month by month, make publication in its present form possible.

Support our advertisers then whenever possible, mention this publication too when making an enquiry or a purchase. By so doing you not only help us with the actual Bulletin but you materially assist the Association of which the publication of the Bulletin is an important and integral part. W.R.A.

INTERNATIONAL PEAT SYMPOSIUM

DUBLIN, JULY, 1954

P. B. FLEGG

Over 250 delegates from nineteen countries attended the International Peat Symposium held in Dublin. This Symposium is believed to be the first of its kind and was organised by Bord na Mona, the Peat Development Board in Eire.

The aspects of peat which were discussed ranged from methods of peat winning to reclamation for agriculture and forestry after the peat had been removed. Indeed in some countries the reclamation of land is one of the most important objects.

Visits to several peat bogs were arranged and it was impressive to see the extent to which peat winning, once entirely done by hand, has been mechanised.

The main theme of the symposium was the utilisation of peat resources as fuel and one of the major problems is that of removing the water from the peat. When dug from the bog the peat contains about 90% moisture. This is a contrast to the problem of mushroom growers of wetting peat for casing.

Papers of interest to mushroom growers and scientists described the chemical and physical properties of sphagnum moss and peats. Work by Black, Cornhill and Woodward has shown a nitrogen content of 1% to 2% and cellulose varying from 8·4% to 34·7%. Extraction of peat with boiling water and acid has revealed the presence of several sugars and the free amino acids and proteins have also been quantitatively investigated.

R. L. Mitchell of the Macauley Institute, Scotland, has found many trace elements to be present in Scottish peats. It has been shown that certain of these elements show zones of accumulation in the lower layers of the peat.

The factors affecting the strength and deformation of peat have been studied by Hanrahan. He concludes that the shearing strength is wholly cohesive in character and depends mainly on the water content. A most interesting paper on the air drying of peat was given by J. Dalton. Although the work in this paper refers to the initial drying of raw peat as dug from the bog, there is little doubt that the behaviour of raw peat and peat rewetted and used for casing mushroom beds is in many respects similar. The drying process is divided into three periods. During the initial period of saturated surface the rate of evaporation is the same as from an open water surface. This condition is maintained until water is no longer supplied from the interior at a rate equivalent to the rate of evaporation. The rate of evaporation then decreases linearly until a point at which another sharp reduction in the rate of drying occurs. This is the period of unsaturated surface. This second reduction

in the rate of drying is explained by the fact that during the period of saturated and unsaturated surface the main resistance to vapour removal is at the solid surface. During the third period, that of inner diffusion, the main resistance is due to liquid or vapour diffusion through the peat. The equations relating to these three stages of drying are discussed and may prove helpful when considering the conditions which prevail in a peat casing.

Of particular interest to the mushroom grower was a paper by O'Leary of the Bord na Mona who has been investigating the use of peat moss in agriculture and horticulture. Peat moss is found to be satisfactory as a poultry litter and there is reason to believe it would be beneficial for use with cattle.

A series of tests with a sphagnum peat moss as a mushroom casing were also described. In the early trials some difficulties were encountered, cropping was irregular and fruiting delayed. This was found to be due to insufficient wetting of the peat before casing. Subsequently the peat was saturated in tanks for about 36 hours and excess water allowed to drain off before casing.

The use of finely ground limestone with the peat was found to give better and more uniform yields and cleaner mushrooms than hydrated lime even when liming was carried out to give similar pH readings at various levels. It was not found possible to raise the performance of the hydrated lime treatments by variations in the watering treatment.

With ground limestone it was found that the optimum pH was upwards of 6·5. No upper limit was mentioned.

In attempts to wet the peat thoroughly before casing it was found that the grade of peat moss described as horticultural was slow to absorb water especially when it had been previously dried to a low moisture content. The poultry grade, of greater particle size, was found to be much easier to wet but would have had to have been applied at a greater depth. It was decided therefore, to use a mixture of equal parts of the fine and coarse grades. It is claimed that this mixture was easier to water than the horticultural grade alone and that any grade of peat required heavier routine waterings than any soil casing.

Of three mushroom growers visited, one was using a peat moss casing with satisfactory yields, while the other two had not been satisfied and had reverted to soil or a soil-peat mixture.

SPECIAL ANNOUNCEMENT

SPENT MUSHROOM COMPOST. We regret having to advise our customers that we do not want spent compost, not even as a gift. Our transport drivers are warned of instant dismissal if they have any contact with it, if avoidable.

We have always dealt exclusively in fresh stable manure and regret that we cannot entertain any contact whatsoever with spent compost; or with farmyard manure, slaughter house waste or any other rubbish. STABLE MANURES LTD., NORTH ROAD, LANCING, SUSSEX.

THE FRED. ATKINS ALPHABET : I–K

Import Duty. A duty of 8d. per lb. was imposed in 1931 on all fresh mushrooms coming into Great Britain and Northern Ireland except from Eire. There has been some half-hearted juggling with this duty since the Second World War, and the NFU has now asked the Government to reconsider the wretched 10% and 20% *ad valorem* GATT decision. The danger from *canned* mushrooms, however, may be much more serious in the near future; have we any " protection " against them? I imagine not.

Imports. The French growers sent us 252,500 lb. of mushrooms in 1953, compared with 270,000 lb. in 1952; but the weight of *canned* mushrooms was increased by 20 per cent. From Eire last year came 693,168 lb., compared with 543,648 lb. the previous year—all *fresh* mushrooms.

Indoor Composting. What is generally regarded as the Indoor Method of Composting—not to be confused with the Indore Method—is that described by Dr. E. B. Lambert in 1941. The basis of this method is a thorough mixing and wetting of the manure outside, followed by a controlled period of composting proper in the beds at a prolonged pasteurizing temperature.

Ink Caps. The appearance of a few of these fruiting bodies of *Coprinus atramentarius* gives no grower concern, but a mass of them suggests under-composting or excessive moisture in the compost. Dr. Lambert once suggested that *Coprinus comatus* might be cultivated for canning, but I never heard any more of the proposal.

Insecticides. The standard insecticides to-day are BHC (preferably the odourless lindane type) and DDT for flies and springtails, and TEPP for mites. But the mode of attack changes too frequently to allow one to be dogmatic. Pyrethrum still has its uses, for example; and who can ignore malathon?

Insulation. Adequate insulation of heat rooms and cropping houses not only gives better control of conditions, which should mean better crops, but reduces heating costs. It is one of the really worthwhile capital expenses.

Intervals. Why do most growers speak of beds coming into crop " so many days after spawning." Surely it is the interval between the filling of the tray or shelf and its coming into crop which is the fairest basis for comparison? Or is this a misapprehension traceable to my being " left on the shelf " in these enlightened days? Surely, though, the quicker a tray or shelf is in crop the better?

Kennett Square. The centre of the Mushroom Industry in the United States, and headquarters of the Pennsylvania MGA. One of the first mushroom houses in Kennett Square was built in 1896, by J. B. Swayne, still one of the leading spawn makers in the U.S.A.

Krilium. One of the first and best-known proprietary names of a " soil conditioner " which we once hoped would help poor casing soils to " breathe ". Three of these " conditioners" were tried at the Yaxley Research Station in 1953; " none had any beneficial effect," says the Report, " and one of them gave a significantly lower yield."

Dr. L. R. KNEEBONE writes further about . . . . . .

IRRADIATING SPORES

In *MGA Bulletin* 50 (February, 1954), I reported very briefly on a phase of our mushroom research at Penn State.

The third paragraph reads: " Short wave-length radiations have long been used to produce mutations in higher plants and among certain micro-organisms. However, a perusal of the literature reveals that ultra-violet and gamma radiations have probably not been used to irradiate mushroom spores for the purpose of inducing progressive mutations which might improve quality or yield."

Actually Drs. Stoller and Stauffer (1, 2) irradiated mushroom spores in 1944-45 and observed the vegetative variations obtained. Their intention was to induce mutations for the purpose of improving quality and/or yield; however, neither time nor physical facilities would permit them at that time to carry the cultures through the fruiting stage. It should be recognized that their work was the first of its kind to be reported.

Our work (3) was concerned only incidentally with vegetative variations and was primarily concerned with variations manifest in the production of sporophores.

References

1. STOLLER, B. B. " Experiments in Mushroom Cultures." Thesis, Univ. of Wisconsin, pp. 1-98, 1945.

2. STOLLER, B. B. & J. F. STAUFFER " Studies on Naturally occurring and Ultraviolet Radiation Induced Strains of the Cultivated Mushrooms, *Agaricus campestris L.* " Mushroom Science II, The Proceedings of the Second International Conference on Scientific Aspects of Mushroom Growing, pp. 51-65, 1953.

3. KNEEBONE, L. R. " Spawn Research at Pennsylvania State University." MGA Bulletin 50; pp. 47-48, 1954.

FOOD FAIR (Olympia)

The MGA Secretary will be glad to receive any offers of help for manning the MGA Stand at Olympia Food Fair, 7th—18th Sept. inclusive. Afternoons only.

THE DISPOSAL OF MUSHROOM COMPOST

By **Brigadier J. S. NICHOLS, D.S.O., M.C.**

1. **Preface**

I personally have no knowledge of Horticulture, and only a very small knowledge of mushroom growing; I have, however, discussed this subject at length with experienced growers and market gardeners, who can speak with authority, and I have based my remarks on information thus obtained.

2. **Object**

The object to be kept in view is that a mushroom grower should be able to cover the cost of purchasing manure by the income obtained from the sale of spent mushroom compost.

This is not just a fanciful idea; it is possible, and I know of two mushroom farms where this has been achieved over a period of several years: one of these farms is a small one—about 5,000 sq. ft.: the other has a bed area of about 30,000 sq. ft.

3. **Value of spent Mushroom Compost**

The composition and value of spent mushroom compost is described in some detail in Ministry of Agriculture, Bulletin 34, Appendix II; one remark in this is worth quoting—" Spent mushroom compost is of much higher value (per ton) than either fresh or composted horse manure." It is reasonable therefore to expect that it should be sold for a higher price than fresh horse manure, but in order to effect this, it is necessary to publicise the fact, and bring to the notice of growers and market gardeners its value and the various purposes for which it can be used.

4. **The uses of Mushroom Compost.** (NOTE: I have purposely omitted the word " spent " as I find that it creates a prejudice against the material).

An analysis of mushroom compost is given in the above quoted Appendix, and some recommendations for its use.

A useful and informative article on the subject written by Allan Jackson, B.Sc., of Wye College, was published in a recent number of *Darlington's Mushroom News*. Other articles on the subject have been written by Dr. Edwards and Mr. H. G. Boxall and have appeared in the MGA Bulletin.

From what I have read, and from discussion with growers, it would appear that the principal uses for mushroom compost are as follows:—

(*a*) **General:** as a general manure for fruit, vegetables, flowers, and other horticultural products.

(*b*) **For Conditioning Soil:** mushroom compost can be used in almost unlimited quantities for conditioning soil, and for preparing poor ground for intensive market gardening. Allan Jackson considers that this is the cheapest way of getting soil into such a condition that it will produce two or three crops each season.

(*c*) **Strawberry Growing:** strawberries will grow prolifically in beds composed of mushroom compost alone.

(*d*) **Planting Bulbs:** the bulbs should be covered with the compost.

(*e*) **For Growing Flowers:** almost any kind of flowers are improved by the use of mushroom compost, in particular chrysanthemums.

(*f*) **For Lawns:** mushroom compost makes an excellent dressing for lawns and golf greens, and is officially recommended for this purpose in U.S.A.

(*g*) **Mulching:** mushroom compost makes an excellent mulch or top dressing for practically all kinds of fruit. One large market gardener close to here has used our compost for several years for this purpose with excellent results.

5. **The Advantages of Mushroom Compost**

(*a*) It is easy to transport and handy to use: (*b*) It is clean and sweet smelling: (*c*) It is free from surplus water: (*d*) It is easy to spread, simple to dig in, and readily assimilated: (*e*) It is practically weed free. This may not be entirely so when casing soil is mixed in with the compost, but is definitely so when peat casing is used.

6. **Marketing**

In certain areas such as this, marketing presents no particular difficulties; it is only necessary to bring its availability to the notice of growers, and smallholders, and demands come in.

I can well imagine that in areas where a number of mushroom farms exist close together, the situation may be very different, and it may be necessary to market mushroom compost at a distance for which the assistance of some sort of marketing organisation may be necessary.

A brief account of our experiences in marketing mushroom compost may be of interest.

Our first attempt at selling compost was in 1949, when we engaged an " agent " with a van to take sacks of compost round the allotments in and around Salisbury, selling on commission; at the same time we inserted an advertisement in the Salisbury papers. For a month or so we did fairly well, but before long the arrangement broke down, and we gave up this form of enterprise.

We then contacted various neighbouring growers, who bought by the cubic yard (*@* 10/- per cu. yd.) and collected the compost themselves. This worked well during the autumn, winter and spring, but fell down in the summer.

We then bought a lorry, and took to delivering compost in loads of approx. 6 cu. yds. *@* 10/- per cu. yd. plus cost of transport. This arrangement has worked satisfactorily, and we obtained several contracts for monthly deliveries which enabled us to dispose of the contents of each mushroom house as it was emptied.

In 1952 I visited two mushroom farms where I found compost being sold in sacks at prices varying from 3/- to 5/- per sack, resulting in an overall price of from £2 10s. 0d. to £3 per cu. yd.

NOTE: I have found that one cu. yd. of compost with casing material mixed, on the average weighs ½ ton; this meant that compost was being sold for from £5 to £6 per ton.

I therefore decided that we also would try to sell our compost in bags. I found that I could buy sacks or bags of about 2 bushel capacity, at prices varying from 3d. to 6d. each.

I inserted a notice in the *Southern Daily Echo* twice per week; for two months practically nothing happened, and then orders started to roll in, and increased steadily for several months. We delivered in the Southampton area two or three times per month, and by this means managed to sell about half our compost in bags, the other half being sold in loads on contract as previously.

Naturally this increased our income considerably. I have attached a copy of the advertisement we published. I have found that from September to April, there is considerable demand for compost in bags for gardens and small holdings, but that the demand practically dies out from May to August. This year I am hoping to keep up demand by drawing attention to the mulching properties of mushroom compost.

On the advice of the County NAAS officer I have also had notices published in the NFU County Branch Gazette, which has brought in a number of orders for compost. I have found both the County NAAS officers and the NFU officials of great assistance in disposing of mushroom compost.

I have attached as an Appendix, details of our results for 1953, which show that we are well on the way to covering the cost of purchase of manure by the sale of compost and surplus manure.

7. **Recommendations**

For those who have difficulty in disposing of their spent compost I recommend the following:—

(*a*) Insertion of advertisements in local papers: (*b*) Sending out circulars to growers: (*c*) Insertion of Notices in the County NFU Gazette or similar publications: (*d*) Attending local NFU meetings and speaking on the subject: (*e*) Get someone of importance in the horticultural world to give the subject a write up.

But please note that it takes some time to build up a market for mushroom compost.

8. **Conclusions**

Mushroom growers possess a valuable by-product, which without doubt, could be made to produce a considerable income. In these days, when the price of mushrooms seems to be falling steadily, and cost of labour, transport and materials increasing, I feel that no stone should be left unturned to counteract this unfavourable trend. If more mushroom growers would push the sale of spent compost, I feel certain that the demand would increase.

The ideal would be to have an organisation in each county which would handle and market mushroom compost. This may be a possibility but it is difficult to say how it should get started. Possibly a large central

organization could be set up to handle the matter, and possibly the MGA could do something to assist in this. I have heard that a firm exists in the Midlands who treat mushroom compost, put it up into small bags and sell them at 15/- per bag. I do not know if this is true, but I can well imagine that if mushroom compost is specially treated, and put up in an attractive form, it might sell at that price. At such a price, it might pay growers to send compost to a central factory. I feel that these are matters for others to deal with, but I do think that the whole matter requires careful thought.

I can only hope that the remarks I have made in this article will prove of use to some, and will, at least, set others thinking about the subject. J.S.N.

Appendix I

Advertisement inserted twice per week in *Southern Daily Echo*. " Specially composted stable manure—easy to handle—no smell—excellent for most horticultural purposes 3/6d. per sack collected, 7 sacks £1 or delivered Southampton and Salisbury areas 22/6d., 20 sacks £3 ".

I am now adding a note about the use of compost as a mulch for fruit and flowers, and a dressing for lawns.

Appendix II

Financial results at Merry Orchard Produce Ltd. 1953

We obtain all our manure from local stables on contract; in order to have enough manure to cover our requirements in the summer, we have to contract for considerably more manure than we require in the winter; I am able to use most of this on a second mushroom farm which I have at Bracknell in Berkshire; the remainder we sell to other growers. We use both our own lorry and hire transport for collecting manure. We normally use our own lorry for delivering compost. Occasionally we make use of British Road Services.

Each month I set off what we expend on purchase of manure, hire of transport, cost of advertising, and the running of our own lorry against receipts from sale of compost and surplus manure. I have not made any allowance for labour in these calculations.

The following are the results month by month in 1953.

	Expenditure			*Receipts*		
	£	s.	d.	£	s.	d.
January	82	10	0	72	8	0
February	120	9	0	140	16	0
March	90	8	0	128	0	0
April	93	0	0	120	0	0
May	69	0	0	45	10	0
June	70	0	0	17	0	0
July	62	0	0	34	0	0
August	68	6	0	23	7	0
September	90	0	0	78	10	0
October	113	11	0	95	5	0
November	85	11	0	69	1	0
December	138	0	0	116	15	0
TOTAL	£1,082	15	0	£940	12	0

Of the total receipts £511 was for sale of spent compost, the balance being receipts for manure used at Bracknell and sold to other growers. The figures therefore show an expenditure over receipts of only £142 3s. 0d. for a complete year.

LETTER—*To the Editor*

re **Lindfield Farm Walk—MGA Bulletin**

August, 1954.

Having just read the report of above as contained in this month's bulletin, I feel it incumbent upon myself to draw your attention to the note in reference to Mr. Slack who originally built and established the Lindfield Mushroom Farm about the year 1934.

Whilst on a visit to Canada last year, during which I called upon Messrs. Slack Brothers, I was very shocked to learn of the sudden death of the Mr. Slack who established the farm at Lindfield.

His death occurred some few years ago while out shopping with his wife, when he complained to her of feeling unwell and upon stepping into his car, he collapsed and passed away immediately.

I would further point out that although the late Mr. Slack commenced in association with his elder brother to establish the firm in Canada known as Slack Brothers, he eventually ceased to be a member of this firm and started up on his own account, after which, he came to this country.

Yours faithfully,

(*Signed*) ALEC G. SPARKES (*Director*),

A. G. Sparkes (Smugglers Farm) Ltd. Rustington, Sussex.

SMALL ADVERTISEMENTS—(*continued back cover*)

CREOSOTE: 40 gallons 83/4d. delivered in free drum; REFINED TAR (needs heating) 88/4d.; BARN TAR (can be painted on cold) 93/4d.; COOPERS, Limeburners, Canterbury.

FOR NORTHERN MUSHROOM GROWERS. Save on carriage: Finest quality imported Sphagnum Peat: 20 bushel bales. Quotations and samples on request. ELTONMOSS LTD., 8a James Street, Harrogate. 'Phone: 4554.

EXCELLENT MODERN MUSHROOM FARM very pleasantly situated in delightful country surroundings near Woking, Surrey (London 25 miles, 30 minutes Waterloo). Exceptionally well equipped labour-saving plant installed only 4 years ago and maintained in first-class condition. Well built breeze, rendered and corrugated asbestos building 118′ × 48′ containing 6 growing houses with 9,000 sq. ft. bed area on shelf system, boiler house with McNeil steam boiler, office and packing shed: also composting and soil sheds, 7-roomed timber and asbestos Bungalow together with about 7½ acres of land (permission has been granted to erect one or more houses if required). Main water and electricity connected. Price £6,500 Freehold. WELLER, SON & GRINSTED, 86 Woodbridge Road, Guildford. (Tel. 3386.)

CHALK AND LIME FOR MUSHROOM GROWING

A. W. DEAN

Frank Cooper (Canterbury) Ltd.

Every day we limeburners are asked for chalk or limestone or lime by some fresh name. This is due partly to the many local descriptions which have found their way into textbooks, partly to the imagination of our customers, but also to our own habit of giving fancy names to simple products.

To " burn " lime we heat up in kilns, lump chalk or limestone, which are chemically both calcium carbonate. This process produces lump quicklime, calcium oxide, which can be ground to any required fineness, but is usually left in fairly coarse grains. As an alternative to grinding, quicklime can be mixed with water, with which it combines chemically, producing hydrated lime, calcium hydroxide, which is marketed in a purified form.*

For casing, mixed with peat or ashes, lump chalk is the common material used in south-east England though limestone chippings have been tried elsewhere. Chalk is used primarily for its physical properties, being very retentive of water, clean, and free from injurious organisms if dug from well below the surface, but a small amount creams down and acts chemically to rectify any acidity in the peat or other material.

The 1″ size is most commonly used, though a few growers prefer 2″, especially for shelves. The chalk usually supplied for agriculture is too fine for casing. When a quarry is approached for the first time the grower should specify that it should consist mainly of small lumps.

Chalk is often used up later, along with the spent compost, on the growers' own land. This makes it eligible for the liming subsidy of over 60% (after 11th September, 50%), which greatly reduces the cost.

When natural soil is used for casing it is often necessary to add " lime " to neutralise any slight acidity. For this purpose ordinary agricultural ground quicklime is most unsuitable, but hydrated lime, often found in nurseries, can be used if it is thoroughly mixed in.

The general and safest material, however, is dried ground chalk, often called carbonate of lime. A fine grade should be specified, all to pass a 40 mesh sieve at least. If ground limestone is used it should be still finer.

Dried, finely ground, chalk is also suitable for correcting the acidity of compost, if this is thought desirable.

**Chemists' shorthand expresses these operations thus:*

	$CaCO_3$	(*calcium carbonate*)
—	CO_2	(*carbon dioxide*)
=	CaO	(*calcium oxide*)
	CaO	(*calcium oxide*)
+	H_2O	(*water*)
=	$Ca(OH)_2$	(*calcium hydroxide*)

SHE'LL BE THERE—WILL YOU ?

Anne Cullen, who plays the part of Carol Grey in the well-known radio programme " The Archers," is to attend the annual Mushroom Industry Exhibition at Tunbridge Wells on the afternoon of the second day, 7th October.

Dark and most attractive, Anne, in private life Mrs. Tuson, wife of B.B.C. producer and script writer Neil Tuson, lives at Witham, Essex. She is particularly suited for the part of Carol Grey, not only because she is a most accomplished actress, but also by virtue of the fact that her father was one of the best-known farmers and seed growers in Essex and her mother is also the daughter of an Essex farmer.

In " The Archers " programme Anne has become the owner of a smallholding and when Godfrey Baseley, B.B.C. Sound and Television Rural Programmes Director visited the MGA at Yaxley some time ago, he explained that in " The Archers " programme it was proposed that Carol should grow mushrooms commercially.

Does she like mushrooms? " Yes, I simply adore them," said Anne.

MAC'S MUSHROOM FAMILY

9. The Countess Sonya

SHOW YOUR MUSHROOMS AT TUNBRIDGE WELLS

By G. W. BAKER, *Vice-Chairman of the MGA and Chairman of the Show Sub-Committee.*

The Show Committee are very anxious to have a really large display of mushrooms in all classes at this Year's Show.

Apart from the cash prizes offered, there are five fine Challenge Cups to be won. The gaining of an award is of great value to the grower when marketing his mushrooms and this alone is well worth the effort of entering for as many classes as possible, but the main benefit in winning a cup or even a 3rd place award, is the effect it has on one's staff. It not only gives them great satisfaction, but it encourages them to endeavour to maintain a high standard of growing.

No grower produces perfect mushrooms, so don't be put off if yours are not perfect in your estimation. Show the best you have on the day, its good fun being in the competition and it will be one way you can really support your Association and help to publicise mushrooms.

Last year's winners of all the main five classes of mushrooms on show, was a firm in Surrey.* The mushrooms were picked and packed ready for showing by the staff on the morning of the show (the Directors were enjoying themselves at Harrogate) and sent by rail; they were displayed untouched. So there is no excuse regarding distance.

This year, in addition to the MGA Cup, The Mount Cup and The Thwaites Cup, we have The Poupart Cup, judged on mushrooms in a market pack without the frills usually associated with "showing." There is an additional cup this year, kindly presented by Stable Manures Ltd., for growers with a cropping area of under 10,000 sq. ft. and a picture of this handsome trophy, with replica, is shown herewith.

The general public will be admitted to the show on the Thursday and your Committee hope to see the large stage at the Assembly Hall, crammed with chips of mushrooms.

Don't forget! someone has to win these fine cups and it may be you. The satisfaction of seeing Stanley Middlebrook (see Bulletin 47, page 382) going round drinking out of five cups one of which is yours, is an experience not to be forgotten.

*Mr. Baker is too modest. Messrs. Broadham Produce Co. Ltd., of which Mr. A. D. Jones and himself are Directors, pretty well swept the board at Harrogate.

FIRST STEPS IN GROWING

by McGregor Bulloch

9—SPAWN AND SPAWNING

Spawn, is of course, the mycelium of the mushroom grown on a suitable medium, and which is distributed throughout the prepared compost in order that the latter will be invaded as soon as possible by mushroom mycelium before competitive fungi can obtain a hold.

There are several types of spawn on the market, and the two most favoured media are manure and grain. The former is used generally for deep planting, and the latter for scattering on the surface of beds, being most useful when trays are used.

The preparation of pure-culture spawn is extremely difficult, while the selection of the various spawn strains is a task beyond the powers of even the most experienced grower, unless he has had the necessary laboratory training. In this way, the mushroom grower is different from the flower or fruit-grower who is able to experiment for himself in trying to find new plant strains. Despite the difficulties attending its manufacture, modern spawn is usually absolutely reliable, unlike the spawn produced many years ago. Naturally, the different strains of spawn produce mushrooms of differing qualities and rates of yield, but the beginner must never fall into the error of blaming the spawn as soon as the crop goes wrong. The cause of 90% of crop failures is, quite simply, an unsuitable compost. Secondary disease effects would be much less fatal if the compost were to be prepared properly in the first place, since a healthy mushroom will resist parasitic diseases and adverse growing conditions to a remarkable extent.

Manure spawn is broken into pieces of a suitable size and inserted just below the surface of the compost, or slightly deeper if it is intended to allow the surface of the compost to dry out before the casing medium is applied. The spawn piece is generally about the size of a walnut and a pattern is determined beforehand so that the pieces are inserted about 9″ apart in rows which are themselves spaced at 9″ intervals. The size of the spawn piece varies according to the grower's preference, but it is not necessary to use more than one carton of spawn per 50 sq. ft. of bed area.

Grain spawn (generally wheat or rye) can be inserted in the same way as manure spawn but this need only be done where the compost is rather dry on the surface. With a normal, damp compost, the grain is scattered evenly on top of the compost, and nothing further need be

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GRAIN GROWN by
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done if the humidity of the air and bed surface is sufficient to sustain vigorous mycelial growth. If not, the grains are easily worked into the surface of the compost by scuffling the top surface with the fingers so that the grains fall between the straws. A light firming with the hands ensures good contact and helps to prevent drying out. Depending on the amount of grain present, a carton of spawn will suffice to spawn between 75 and 100 sq. ft.

Regarding this question of the rate at which beds should be spawned, there is always doubt in the mind of the newcomer to mushroom growing. The tendency is for growers to over-spawn, even those of considerable experience being somewhat nervous of the job. The beginner would do well to grasp the fact that, if he spawns at double or treble the normal rate, there will be no difference in the yield, and in fact, if the compost is a really poor one, there will be little or no yield by the time diseases have taken charge of the beds. In other words, by spawning at 50 sq. ft. to the carton on a bad compost, there is no more likelihood of getting a good crop than if the same carton were used to spawn 100 sq. ft. If the grains from a carton of spawn were to be placed meticulously at regular intervals on the surface of the compost, it would be possible to spawn at the rate of several hundred square feet to the carton, but as this is obviously impracticable, the stated rate of 75 to 100 sq. ft. allows for quick broadcasting, when several grains roll together and yet still give sufficient coverage to enable the spawn to knit up in a week or so.

Under favourable conditions of temperature and moisture, the mycelium starts to grow from each spawn fragment, and as it contacts the prepared compost it feeds on the new material and moves on steadily in all directions until it invades every portion of the compost.

The speed of invasion is usually retarded if the compost is greasy or overwet, and is retarded equally by overdry conditions. Where possible, it is best to try and arrange for the compost to be in such a condition of moisture at spawning that it is not necessary to water the beds between spawning and casing. But when the beds are excessively dry, it does not harm them if frequent light mistings of water are applied even directly onto the spawn.

It is most important that the spawn should not be inserted in the beds until the air temperature has dropped below 80° F. When using manure spawn, which is inserted into the compost, the temperature of the compost must also be below 80° F., since subsequent yield may be affected. It is quite permissible to spawn with grain spawn when the thermometer shows 100° F. or more *in the centre* of the beds, so long as the air temperature is no higher than 75° F., since the compost at the surface will be within a few degrees of the air temperature. In such circumstances, one must be sure that the temperature does not rise again, which may happen if the doors and ventilators are closed after spawning. Generally speaking, it is better to run the spawn at about 65° F., rather than at 75° F. as a great number of growers do.

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MY FAVOURITE RECIPES

12.—Miss G. Rodgers

Principal, Grosvenor School of Cookery

Miss Georgie Rodgers, who was responsible for the wonderful selection of dishes at the " coming out " of *Mushrooms Galore* at the offices of the Wine & Food Society in 1951, has now opened her own Grosvenor School of Cookery in Mount Street, London. We asked what were her favourite mushroom recipes, and she kindly sent them along with permission to publish.

Mushrooms Stuffed with Bacon

4 oz. mushrooms
2 oz. bacon or ham
1 oz. butter
1 tablespoon sauce or 1 yolk of egg
juice of ½ lemon
1 tablespoon breadcrumbs
salt and pepper

Remove the stalks from the mushrooms and trim the mushrooms into even-sized rounds. Chop the trimmings finely. Melt the butter and cook the chopped bacon and mushrooms for a few minutes. Add the breadcrumbs and seasonings and bind together with a tablespoonful of good sauce or the yolk of egg. Place the mushrooms head downwards in a greased fire-proof dish. Spread the stuffing on top of each mushroom and cover with a greased paper. Bake for 15 minutes in a moderate oven. Serve on rounds of fried bread garnished with fresh parsley.

Cream of Mushroom Soup

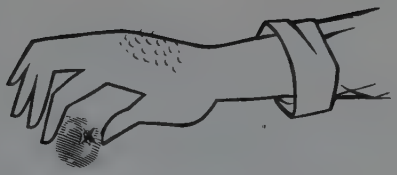
½ lb. fresh mushrooms
1 pt. white stock
1 oz. butter
1 oz. flour
¼ pt. milk
squeeze of lemon juice
salt and pepper
1 teaspoon chopped parsley
¼ pt. cream
1 onion, stick of celery

Melt the butter in a saucepan and add the finely chopped onion and celery. Cook for a few moments then add the chopped mushrooms. Cover and cook for 10 minutes, then add the stock and simmer for an hour. Pass through a fine sieve, then thicken with the flour and milk, and bring to the boil. Season to taste and add the cream chopped parsley and lemon juice just before serving. Hand croutons of fried bread.

Mushrooms en Brochette

4 oz. medium sized mushrooms, chicken livers, lean bacon, salt and pepper
silver skewers or rounds of hot buttered toast.

Peel the mushrooms and remove the stalks. Cut the chicken livers and bacon into pieces the same size as the mushrooms. Thread the mushrooms on to the skewers alternately with the chicken livers and bacon. Brush over with melted butter or oil and cook for 10 minutes under the grill or in the top of a hot oven. Serve on the skewers, or on rounds of hot buttered toast.



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NEW MEMBERS

For many months it has not been possible to find space for the list of new members of the Association but, for this issue, the difficulty has been overcome.

GROWER MEMBERS

Butchers & Lavercombe, Oxstalls Lane, Longlevens, Gloucester.
Rudkin, T. J., Highfields Nurseries, Big Common Lane, Bletchingley, Surrey.
Coggle, Group Capt. C. K. J., Woodend Garden, West Stoke, Chichester, Sussex.
Adams, A. E., "Sunnybank," West End, Henfield, Sussex.
Green, G. W., Whitegates, Ferriby High Road, N. Ferriby, E. Yorks.
Carter, J. R. L., "Monksdene," Cowick Lane, Exeter.
Dredge, Major A. L. A., Combe House, Combe Bank, Sundridge, Kent.
Sheldrake, Miss Dorothy M., 16 Holston Road, Halesworth, Suffolk.
Pickles, G. & H., Enchmarsh, Leebotwood, Salop.
Turner, H., 17 West View, Kelbrook, via Colne, Lancs.
Dalton, Alan, Folly Hall Farm, Outwood, Nr. Wakefield, Yorks.
Farrow, A., Rood Lane, King Street, Clowne, Chesterfield, Derby.
Cansdale, P. F., The Circuits, Cuckoo Hill, Pinner, Middlesex.
Hawkins, A., Bungalow Farm, Hillrow, Haddenham, Cambs.
Branca, Alfredo, Elmbridge Road, Cranleigh, Surrey.

OVERSEAS GROWER MEMBERS

Domosh, Stanley, J. B. Swayne Inc., Kennett Square, Pennsylvania, U.S.A.
Roca, Jacques, Mandri 60, Barcelona, Spain.
Edgell, Gordon & Sons Ltd., P.O. Box 127, Cowra 3W, N.S.W., Australia.
West, Howard R., West Foods Inc., P.O. Box 590, Salem, Oregon, U.S.A.
Speakman, E. B., Avondale, Chester County, Pennsylvania, U.S.A.
Dewcrisp Products Ltd., P.O. Box 42, Scottsdale, Tasmania, Australia.
Hongos de Mexico, S.A., Madrid num 21-213, Mexico, D.F.4.
Losito, Vincent & Sons, Toughkenamon, Pennsylvania, U.S.A.
Frezzo, E. & Sons, Toughkenamon, Pennsylvania, U.S.A.
Fairchild, Thomas, Elm Grove, Wisconsin, U.S.A.
Marino, Albert Di., Toughkenamon, Pennsylvania, U.S.A.
Miami Mushroom Company, 5550, N.W. 36th Avenue, Miami, Florida, U.S.A.
Snow Cap Mushrooms Inc., 71-75 Wyman Street, Woburn, Massachusetts, U.S.A.
Pusey, J. D., Avon Heights Mushrooms, Box F., Avondale, Pennsylvania, U.S.A.
Slonina, Mitchell, S.S. Food Producers Inc., Box 194, Mt. Prospect, Illinois, U.S.A.
Mastarone, F. J., Mushroom Farm, R.D. 2, Leechburg, Pennsylvania, U.S.A.
Yarboro, Scott P., P.O. Box 66, Lacey, Washington, U.S.A.
Santucci, V. & A., Avondale, Pennsylvania, U.S.A.
Hunte, "Epi" W., Hannover, Linden, Postfach 144, Germany.
Garwick, Mrs. Joyce, Chilterns, Wynberg, Cape, South Africa.
Eyde, S. M., Sande Bruk, Horten, Norway.
Cox, T. A., P.O. Kloof, Natal, South Africa.
Peyronnet, Monsieur, Establissement Barbier, 1 Rue de la Tranchade, Angouleme, Charente, France.
Mycol, N. V., Zinneveldlaan 16, Santpoort Street, Holland.
Paryzek, P., 7 Greenhill Road, Bundoora, Melbourne, Australia.
Mouton, G., Champignonniere Chairfine, Cave d'Hydra-Birmandreis, (Voirol), France.
Ossington & King, 5 Short Street, Lithgow, N.S.W., Australia.
Maritz, Stephen, P.O. Box 1432, Johannesburg, South Africa.
Jonker, Age, 412 Mutual Building, Church Square, Pretoria, South Africa.
Deisseroth, R. H., Keoki Farm, P.O. Box 3170, Honolulu 2, Hawaii.
O'Connor, L. & M., Lot 11, Forest Road, Lugarno, N.S.W., Australia.

A list of new Honorary Members will appear next month.

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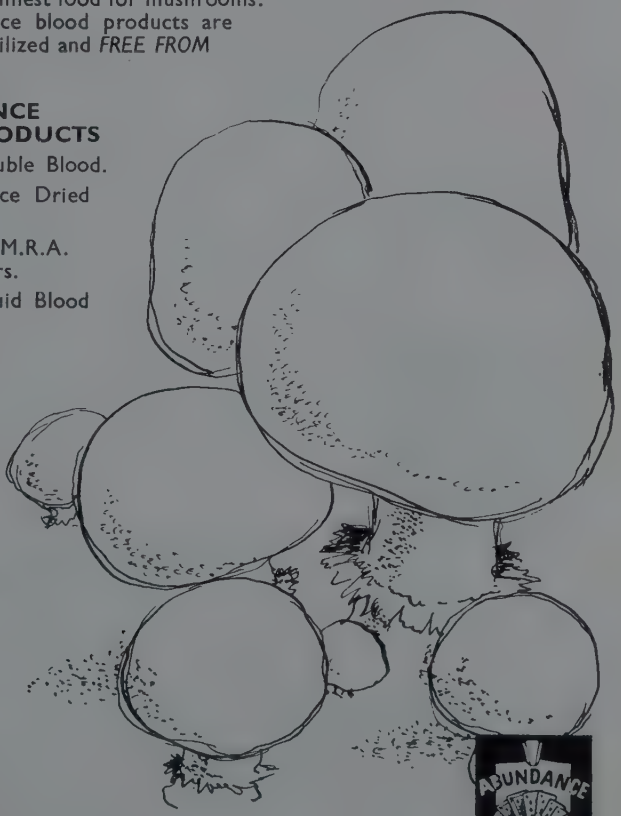

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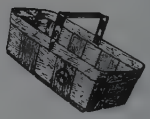

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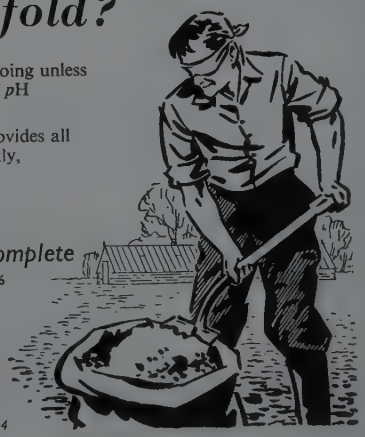

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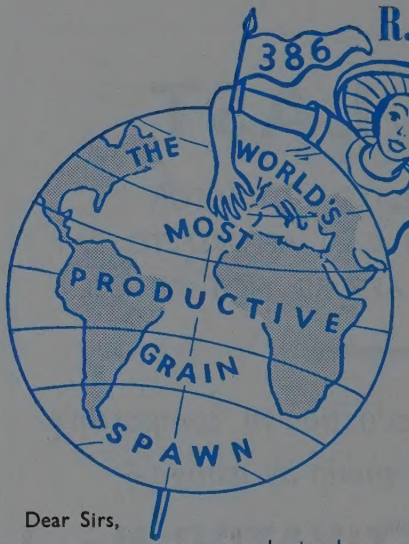

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Dr. A.....
Surrey.
17th *June*, 1954.

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I wish to draw your attention to the fact, when being cased after fifteen days, we could see not only a vigorous spawn run, but every appearance of a *very promising crop.* The spawn itself is of remarkable quality and the mushrooms are of an equivalent nature in general. I can assure you that these mushrooms are *as good in taste as they are in texture* and, therefore, yours is the *product of the future.*

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(*Signed*) Dr. A.....

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